Volatile compounds of esssential oil from different stages of Michelia alba (cempaka putih) flower development

ABSTRACT

Seven developmental stages of Michelia alba (cempaka putih) flowers namely Stage 5 to 11 (S5ï S11) were investigated for their volatile compounds. The essential oil was isolated by Simultaneous Distillation Extraction (SDE) technique and the oil obtained was subjected to Gas Chromatography-Mass Spectrometry (GC-MS) analysis. In total, 78 compounds representing 93ï 98% of the overall M. alba volatiles were identified. Thirty-three of these compounds belonged to isoprenoids group which comprised 30ï 50% of the total volatile compounds detected throughout S5ï S11, whereas the remaining belonged to fatty acid derivatives, benzenoid, phenylpropanoid and other hydrocarbon compounds. The major compounds which represented more than 10% of the essential oil at each stage were dihydrocarveol (S5ï S8), linalool (S9ï S11), butanoic acid-2-methyl, methyl ester (S9) and cyclohexane, 1-ethenyl-1-methyl-2,4-bis (1- methylethenyl) (S6ï S7). In this study, variations in the compounds of essential oil as well as their level in percentage within the flower development stages were observed. Dihydrocarveol was the most abundant compounds detected in S5ï S8 (44ï 65%), while linalool was the most abundant compound detected in S9ï S11, which accounted for 59ï 89% of the total essential oil obtained. Based on the profile of both compounds, it might suggest that dihydrocarveol was one of the compounds that contributed significantly during bud development through S5ï S8 in which the bud became yellowish and started to swell until the petal just began to open, whereas linalool might contribute significantly to the characteristic fragrance through S9ï S11 in which during these phases, the aroma of M. alba fragrance was very much intense.

Keyword: Michelia alba; Volatile compounds; Essential oil; Gas chromatography-mass spectrometry; Flower development